Interview Series

This year, our interview feature includes a panel of scientists who specialize in fields that can inform historical research. The decision to include interviews with scientists was made with the hopes that this piece will help foster collaborative efforts between historians and scientists in the future. This format will provide readers with two perspectives and ideas for how science-based sources can help further historical research. The goal of this interview series is to encourage increased participation amongst academics in various fields to produce work that includes a broader variety of available resources.

Dr. Sunshine Brosi is an Associate Professor of Ethnobotany and Forest Ecology at Frostburg State University in western Maryland where she runs the only Bachelor's-level program in Ethnobotany in the U.S. She is the President of the Society for Economic Botany, the premier ethnobotanical research society. She has a Ph.D. in Natural Resources from the University of Tennessee, a Masters in Forestry from the University of Kentucky, and a Bachelors of Arts in Environmental Studies from Warren Wilson College. She has taught over sixteen different courses including field courses in Cherokee, North Carolina, Harlan County, Kentucky, Mission, South Dakota, and rural Alaska.

Dr. Jarrod Burks specializes in geophysical detection of the unseen archaeological record that surrounds us, including ancient earthwork sites. He works for Ohio Valley Archaeology, Inc., an archaeological and cultural resource management firm in Columbus, Ohio. In addition, he is the president of Heartland Earthworks Conservancy, an organization that works to study and save Ohio earthworks. Jarrod fell in love with Ohio's mounds and earthworks more than 20 years ago when he moved to Columbus to pursue his doctorate in archeology, conducting Hopewell settlement research at The Ohio State University. His BA in Anthropology is from the University of Illinois. He now spends a

good amount of time each year surveying earthworks, discovering previously unknown sites and retracing the footsteps of the 19th century mappers and travelers who first noted the presence of these ancient monuments in the United States Jarrod's day job takes him all over the country and beyond. He recently completed a large project at Serpent Mound in Ohio and a report on six weeks of geophysical survey in Panama. He has been involved with archaeology projects in Mexico and numerous places in Ohio, as well as a WWII POW recovery project in Poland.

MHR: Since this is a historical journal it might be best if you would be willing to give your definition of ethnobotany?

Dr. Brosi: Ethnobotany is the study of the interrelationships between people and plants. Specifically, ethnobotany explores the diverse dynamic societal viewpoints and knowledge systems in order to redefine and renew our relationships with the environment. Ethnobotanists and economic botanists are people exploring the uses of, and our relationship with plants, cultures and our environment. You might well call our research and educational efforts, the science of sustainable survival. The historic definition of ethnobotany has been in studying traditional culture's uses of plants for food, medicine, and in ceremonial and everyday life. This is a limited definition that ignores the fact that cultures are dynamic and relationships that people have with plants are complex and involve specific knowledge systems, ways of knowing, and worldviews. This approach also assumes a uniquely Euro-centric worldview of a separation between peoples, plants, and the environment. There is also a misconception that ethnobotanists work in exotic locations, like tropical forests, instead of with our own cultures in our own communities.

MHR: Since this is a historical journal, would you be willing to define geophysics and archeology as it pertains to your work?

Dr. Burks: Archaeology is the study of people and their culture through an analysis of physical (bones, etc.) and material (artifacts)

remains. Often, our work starts with finding these remains, and we employ many tools in this quest to understand the human condition. Geophysics, as it relates to what I do in archaeology, involves the use of devices that can remotely sense things underground. Most often these devices include ground-penetrating radar, magnetometers, and earth resistance meters. Radar systems send out radar pulses and "listen" for echoes as the radar energy reflects off distinctive things below ground; magnetometers detect small and large variability in the magnetic fields that are all around us and can detect iron objects, burned sediment, and pits (storage, burial, refuse disposal) filled with topsoil; and earth resistance meters use the flow of electricity to detect subtle changes in the ground's ability to conduct electricity, which can be associated with the presence of earthen constructions (earthworks), roads, and foundations.

MHR: What made you decide to study ethnobotany?

Dr. Brosi: Growing up I spent a lot of time in the woods, hiking and exploring natural communities. In the spring I would visit state parks and watch the wildflowers bloom and my mother would tell me the names of each flower. Each fall I would collect acorns and grow oak trees in our yard. Every year on my birthday in December I would hike with my friends to a waterfall. At ten years old, a mountain that I regularly hiked burned and I watched the kinds of flowers and trees that returned after the fire and took notes in a journal about the change. Through 4-H I found out about careers in the natural sciences and in particular I learned about forestry through my knitting instructor's husband and from Tom Barnes at the University of Kentucky. I decided when I was 14 and attended 4-H forestry camp that I would become a forester. I was surprised to learn in college that many people didn't already know the names of all the trees and wildflowers. While studying plants I always remembered all of the information that my mother would tell me about their uses including which species gave the spectacular colors of dyes that she used for quilting and which trees were used in the beautiful baskets that we used to collect food

from the garden. I was very interested in incorporating cultural uses of plants, especially the uses in crafts, along with ecological and biological information about plants. For my graduate studies, I was lucky enough to work on socioecological keystone species, plants that are extremely important for both the local cultural community and the ecological community of Appalachia. My graduate research on American chestnut for my Masters and butternut for my PhD allowed for multiple opportunities for integrating cultural elements into ecological restoration projects. I specifically worked with the Eastern Band of the Cherokee Nation on cultural resource plantings of tree species for making and dying traditional baskets.

MHR: What made you decide to study geophysics and archaeology?

Dr. Burks: I was first attracted to archaeology as an undergraduate. I liked the idea of using material remains to understand past behaviors. It is a very challenging puzzle and it allows us to build the historical record backward, though not in the same way that written texts can. It was amazing to me as a new student to discover that we are surrounded by these archaeological remains…and they are just waiting to be found and decoded. Geophysics appealed to me because it represented a way to do archaeology much more efficiently, by quickly locating the things below ground that we are interested in excavating. It can also allow us to study what's below ground at a large scale that simply is not possible through excavation…and, geophysics is nondestructive!

MHR: What are your main research focuses?

Dr. Brosi: I worked on applied conservation projects on the sustainability of threatened plants that are cultural keystone species. I specifically work in economically challenged communities that are often overlooked in our society. Specifically, I work on developing dynamic sustainability plans for planting white oak trees and butternut trees for Cherokee basketry in

western North Carolina. I have worked on the sustainability of hickory for chair bottoms in Harlan County, Kentucky. I work on food sovereignty initiatives and access to edible wild foods on the Rosebud Reservation in South Dakota and in rural Alaska. In addition, I work on applied climate vulnerably action plans for National Parks through tree-ring research.

My research integrates the fields of ecology, forestry, plant biology, and cultural anthropology and integrates science to solve societal problems. Saving plant species from extinction involves conservation biology skills especially an understanding of the cultural and historical importance of maintaining a species. I focus on the intergenerational justice approach to problems such as climate change and species extinction. Ethnobotany research focuses on addressing the trade-off of balancing current economic growth which is jeopardizing our future. Specific elements of these relationships include studying agroecology, traditional resource management, ethno-ecological landscapes, and traditional food and nutrition. In addition, cognitive studies in ethnobotany focus on dynamic human-environmental interaction and how this can be used to change our current relationships with the environment.

Dr. Burks: I focus on applying geophysics for archaeological ends in a cultural resource management setting. So, enjoy learning about how to apply the approach in different and more effective ways. My personal archaeological research focuses on the Hopewell culture in the Middle Ohio Valley. Native American peoples who participated in this thing we call Hopewell (we don't know what they called it) had a very distinctive way of life that is relatively rare when you consider human culture on a global scale. So, I spend time working on locating and understanding their settlements, as well as the monumental architecture (earthworks!) they created. Mapping ancient earthworks in Ohio is my true passion, and it is something for which geophysical survey is very well suited. Since there are relatively few archaeologists studying these earthworks and even fewer still who have access to and the ability to use geophysical instruments, I find myself in a very

unique position in the study of this important cultural resource, which by the way is rapidly disappearing.

MHR: In which ways, if any, has history informed your research?

Dr. Brosi: Humans have thousands of years of adaptive knowledge, skills, and values for interdependent relationships with the plant world. Reconstructing past life-ways with plants can aid in our understand of the dynamic elements of cultures and the value systems shared by various cultures that allowed for subsistence and sustainable livelihoods on our ecosystems for over 14,000 years. Understanding these historical relationships is vitally important to sustain the future of ourselves on our planet; specifically that many people view humans as merely strands in the immense fabric of the universe (from Dr. Mary Thomas, a Secwepemc elder quoted in Turner 2014 Ancient Pathways, Ancestral Knowledge). In contrast, a Eurocentric Christian view of the world often creates artificial hierarchical relationships among peoples and a separation between people and the natural world. For example, understanding the archaeological plant record allows us to acknowledge tropical forests as not an untamed wilderness untouched by humans but as an ecosystem with unique, local ecological management that has attributed to biodiversity and sustainability for generations. History allows us to see the ways in which many landscapes have consistently hosted humans for millennia.

Dr. Burks: Archaeologists do not only excavate! We very regularly rely on historical records in our research, especially in the subdiscipline of Historical Archaeology. Because we often marry historical information with what we learn from the archaeological record, we are in a unique position to use the archaeological record to evaluate and fill in the historical record, and vice versa. We often look to the historical record for specific information about the individuals we study. Short of finding their skeletal remains, historical documents written by or about individuals are the only ways to learn such specific details about

their lives.

MHR: How can ethnobotany be used to inform history?

Dr. Brosi: Paleoethnobotany and dendroethnobotany allow us to reconstruct past life ways with plants. Linguistic studies and ethnoecological studies allow us to see movements of plants and people across landscapes—just to name a few ways. Ethnobotany can be used to determine specific elements, include historically relationships between humans and fire and differences among cultures and across ecosystems—as just one example.

MHR: How can geophysics/archeology be used to inform history?

Dr. Burks: Historical documents can be rare or biased in various ways. Archaeology can help provide historians access to details about the past that are not recorded. For example, how much is written about the day-to-day lives of slaves in nineteenth century America? Not that much, but every slave cabin has a material (archaeological) record associated with it, and this is something that can be examined to produce details about many, many aspects of daily life. Finding these archaeological deposits can be challenging, and geophysics helps archaeologists do the job of finding the past more effectively. Geophysical data can also be used to address questions independent of additional archaeological data, so it is not only useful for finding things for archaeologists to study further through excavation. Imagine if you were interested in studying the layout of outbuildings and other facilities in yards around historic houses, perhaps as a means to identify specific ethnic groups in the past (the way people use space can reveal things about their social beliefs and upbringing). Geophysical survey data can locate the remains of such features in yards, as well as other things that are very hard to see in excavations. A map of the results of a radar survey may be sufficient for studying building layout.

MHR: In what ways has your research helped expand our

understanding of people in the past?

Dr. Brosi: I think there is a general misconception that ethnobotanists study ancient peoples and their work focuses on learning about the past. Cultures are dynamic and change over time. Native Americans are not historical objects, they are people who are living today in our modern societies. Many of the stories about plants that I hear women tell their children, just like the stories that my mother told me, incorporate traditional ecological knowledge that has been handed down for generations. I frequently interview people, living today, who grew up nomadically on dog sleds in Alaska. I focus on solving applied ecological issues that address problems that modern day people are having including seasonal poverty, living in food deserts, and lack of access to the natural resources that they need for survival. I work in some of the most economically challenged areas in the United States with some of the lowest life expectancies including: Todd County, South Dakota; Harlan County, Kentucky; Cherokee, North Carolina; and Bethel, Kotzebue, and Scammon Bay Alaska. I work with people who are trying to figure out how to sustain life on their land and feed their children.

Dr. Burks: I think one of my biggest contributions has been in using geophysical survey to show that there are (1) more ancient earthwork sites in Ohio than anybody ever imagined was possible, and (2) these earthwork sites are a lot more complicated than previous maps have led us to believe. The surveys are detecting more earthen enclosures at previously known sites and the remains of wooden architecture (e.g., patterns of postholes) that were not known about previously. Finding (1) suggests that there were more people on the landscape doing more things in more places than we previously thought—i.e., Ohio circa 1600-2100 years ago was a much busier place than we realize. There are many implications here. The same goes with finding (2)—these places are much more complicated than we thought. While I can think of many implications here, the most important in my mind is how do we properly study a place if do not fully understand its scale? Also,

how can we protect a site if we do not know its composition or boundaries?

MHR: Have you ever worked with a historian to conduct research? If yes, how was that experience?

Dr. Brosi: Yes, I have, and it was positive. I believe that all research projects benefit from expertise from a variety of disciplinary foci. Complex problems are more likely to be solved when diverse expertise and a diverse group of people work together.

Dr. Burks: If by "historian" you are referring to someone with a graduate degree in History, then no, not from the inception of a project. But I often interact with historians in myriad ways during more traditional archaeological projects…and I have worked with many people who do historical research, but are not professional historians.

MHR: What could be done to increase research collaboration across disciplines (both generally and as it relates to history)?

Dr. Brosi: I think this is often a social justice question of where people have chosen to conduct research and why. Often the communities in greatest need are overlooked while other communities are romanticized and focused on. Another great question I often ask is what research question are you asking? Why? And what are the applied socioecological benefits of solving these specific problems? Complex interdisciplinary problems related to humans and the environment benefit from approaches from various disciplines. One of my favorite Gus Speth (an American environmental lawyer and advocate) quotes is: "I used to think that top environmental problems were biodiversity loss, ecosystem collapse, and climate change. I thought that thirty years of good science could address these problems. I was wrong. The top environmental problems are selfishness, greed, and apathy, and to deal with these we need a cultural and spiritual transformation.

And we scientists don't know how to do that."

Ethnbotany focuses on how cultures today solve view and environmental problems and how cultures have been able to survive for generations in a dynamic, changing world.

Dr. Burks: (1) How about conferences where both historians and archaeologists are invited to present their research, (2) grants that favor historian/archaeologist teams, or (3) academic programs that make classes in history and archaeology a requirement for both disciplines? I would have loved to have taken a class or two in methods of historical research, but there simply wasn't enough time. Such classes in history for archaeologists would have to be tailored to archaeologists, and the same would be true for historians taking archaeology classes. No doubt there already are programs like this in some academic programs, but it certainly is not universal.

Through these interviews, it is made apparent that history and science can inform one another. The use of science-based sources can be useful to historians studying marginalized people. These marginalized groups often have little to no text-based sources linked to them, but both Dr. Brosi and Dr. Burks demonstrate the ways in which their scientific studies provide revealing information about these people. In addition, both Dr. Brosi's and Dr. Burks' work demonstrate the ways in which people have interacted with their environment in the past. Historians can use this work to help further both environmental and traditional historical studies. Finally, historians should also be offering their services to scientists, as text-based sources could provide useful information to scientists studying various groups of people.